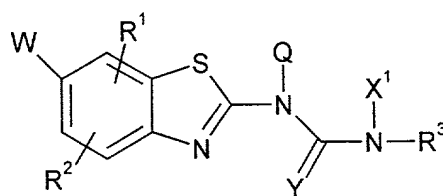


# CLAIMS

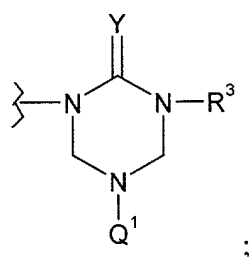
What is claimed is:

1. A compound of formula (I),



(I),

racemic-diastereomeric mixtures thereof, optical isomers thereof, prodrugs thereof, isotopes thereof or pharmaceutically-acceptable salts of said compound, isomers, prodrugs and isotopes, wherein, Q is H or represents a bond which is taken together with  $X^1$  and the two nitrogen atoms to which Q and  $X^1$  are attached and the  $C=Y$  group to which the two nitrogen atoms are attached to form

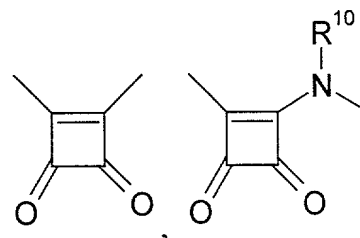


$Q^1$  is  $(C_1-C_6)$ alkyl;

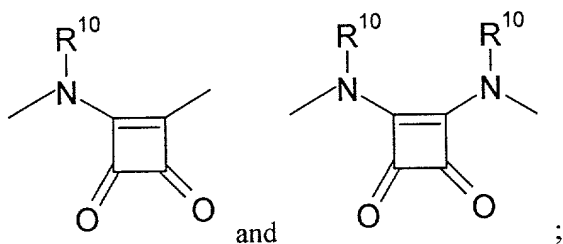
Y is O or S;

W is H, Cl, Br, I,  $NO_2$ , CN, SCN,  $OCF_3$ ,  $-X_q-(C(R^{10})_2)_a-Y^1_q-(C(R^{10})_2)_a-Z^1_q$ , or an optionally substituted group selected from the group consisting of alkyl, alkenyl, alkynyl, heterocyclyl-alkenyl, and heterocyclyl-alkynyl;

$Y^1$  and X are each independently selected from the group consisting of phenyl, heterocyclyl,  $NR^{10}$ , O, S, SO,  $SO_2$ ,  $CF_2$ , CFR, C=O,  $(C=O)NR^{10}$ ,  $SONR^{10}$ ,  $SO_2NR^{10}$ ,  $NR^{10}(C=O)$ ,  $NR^{10}SO$ ,



$NR^{10}SO_2$ ,  $NR^{10}SO_2NR^{10}$ ,  $NR^{10}(C=O)NR^{10}$ ,



q for each occurrence is independently 0 or 1;

a for each occurrence is independently 0 or an integer from 1 to 5;

R<sup>10</sup> for each occurrence is independently selected from the group consisting of H, optionally substituted aryl, optionally substituted heterocyclyl and an optionally substituted alkyl group optionally substituted with one or more of the following: a C<sub>1-6</sub> alkyl group optionally substituted by one or more hydroxy, halo or optionally substituted amino; a C<sub>1-6</sub> alkoxy group optionally substituted by one or more hydroxy, halo or optionally substituted amino; hydroxy; halo; or optionally substituted amino;

Z<sup>1</sup> is H, optionally substituted alkyl, optionally substituted aryl or optionally substituted heterocyclyl;

X<sup>1</sup> is hydrogen, alkyl, hydroxyalkyl or represents a bond which is taken together with R<sup>3</sup> as described below or represents a bond which is taken together with Q as described above;

R<sup>1</sup> and R<sup>2</sup> are each independently hydrogen, halogen, hydroxy, nitro, cyano, COOH, COOX<sup>3</sup>, SX<sup>3</sup>, SO<sub>2</sub>X<sup>3</sup>, SOX<sup>3</sup>, C(O)X<sup>3</sup>, NHC(O)X<sup>3</sup>, C(O)NHX<sup>3</sup>, NHSO<sub>2</sub>X<sup>3</sup> or selected from an optionally substituted group consisting of alkyl, alkenyl, alkynyl, alkoxy, amino, NHX<sup>3</sup>, NX<sup>3</sup>X<sup>3</sup>, alkylamino, arylamino, heterocyclylamino, alkylthio, alkylsulfonato, aryl, aryloxy, arylalkyl, arylalkenyl, arylalkynyl, arylalkyloxy, heterocyclyl, heterocyclyoxy, heterocyclyl-alkyl, heterocyclyl-alkenyl, heterocyclyl-alkynyl, heterocyclyl-alkyloxy, heterocyclylthio, heterocyclylsulfinyl, heterocyclylsulfonyl, cycloalkyl, -(CH<sub>2</sub>)<sub>m</sub>-(CHX<sup>2</sup>)CN, -(CH<sub>2</sub>)<sub>m</sub>-(CHX<sup>2</sup>)COOH, -(CH<sub>2</sub>)<sub>m</sub>-(CHX<sup>2</sup>)COOX<sup>3</sup>, -(CH<sub>2</sub>)<sub>m</sub>-(CHX<sup>2</sup>)SO<sub>2</sub>X<sup>3</sup>, -(CH<sub>2</sub>)<sub>m</sub>-(CHX<sup>2</sup>)C(O)X<sup>3</sup>, -(CH<sub>2</sub>)<sub>m</sub>-(CHX<sup>2</sup>)C(O)NHX<sup>3</sup> and -(CH<sub>2</sub>)<sub>m</sub>-(CHX<sup>2</sup>)NHSO<sub>2</sub>X<sup>3</sup>;

where m is 0 to 4;

X<sup>2</sup> for each occurrence is independently H or an optionally substituted moiety selected from the group consisting of alkyl, alkenyl, alkynyl, carbonyl, S(O)<sub>p</sub>alkyl, S(O)<sub>p</sub>aryl, S(O)<sub>p</sub>heterocyclyl, amino, alkoxy, alkylthio, arylthio, perhaloalkyl, aryl, aryloxy, arylalkyl, arylalkyloxy, heterocyclyl and heterocyclyl-alkyl;

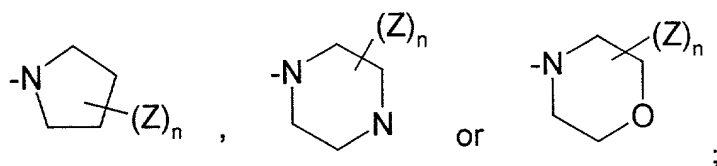
p is 0, 1 or 2;

$X^3$  for each occurrence is independently H or an optionally substituted moiety selected from the group consisting of mono- or di-alkylamino, alkyl, alkenyl, alkynyl, aryl, arylalkyl, heterocyclyl and heterocyclyl-alkyl;

or when  $R^1$  is in the 7-position of the benzothiazole ring,  $R^1$  and W can be taken together with the carbon atoms to which they are attached to form an optionally substituted 5- or 6-membered heterocyclyl ring;

$R^3$  is hydrogen, or an optionally substituted moiety selected from the group consisting of carbonyl, alkyl, alkenyl, alkynyl, cycloalkyl, aryl, arylalkyl, heterocyclyl, heterocyclyl-alkyl, heterocyclyl-heterocyclyl, heterocyclyl-cycloalkyl, amino, alkylamino, arylamino, alkoxy, thioalkoxy and acyl;

or  $R^3$  and  $X^1$  are taken together with the nitrogen atom to which they are attached to form



where Z for each occurrence is independently selected from the group consisting of oxo, or an optionally substituted moiety selected from the group consisting of  $-C(O)(C_1-C_6)alkyl$ ,  $-C(O)aryl$ ,  $-C(O)N(C_1-C_6)alkyl$ ,  $-C(O)N-aryl$ ,  $(C_1-C_6)alkyl$ ,  $(C_2-C_6)alkenyl$ ,  $(C_2-C_6)alkynyl$ , amino, mono- or di- $(C_1-C_6)alkylamino$ ,  $-COO(C_1-C_6)alkyl$ , pyridyl, phenyl, phenyl $(C_1-C_6)alkyl$  and phenyl $(C_1-C_6)alkenyl$ ;

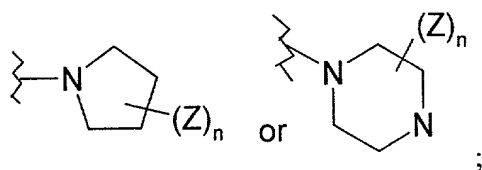
where each of the optionally substituted moieties described hereinabove is optionally substituted by one or more substituents each independently selected from the group consisting of oxo, amino, nitro, mono- or bi- $(C_1-C_6)alkylamino$ , hydroxy, nitrile, chloro, fluoro, bromo, iodo,  $CF_3$ ,  $(C_1-C_6)alkyl$ ,  $-C(O)(C_1-C_6)alkyl$ ,  $-COOH$ ,  $-COO(C_1-C_6)alkyl$ ,  $-S(C_1-C_6)alkyl$ ,  $-S-aryl$ ,  $(C_1-C_6)alkoxy$ ,  $-SO_2NH_2$ , phenyl, phenyl $(C_1-C_6)alkyl$ ,  $-O(C_1-C_6)alkyl-OH$ ,  $-O(C_1-C_6)alkyl-O(C_1-C_6)alkyl$ ,  $-O(C_2-C_6)alkyl-N((C_1-C_6)alkyl)_n$ ,  $-N(C_1-C_6)alkyl-OH$ ,  $-N(C_1-C_6)alkyl-O(C_1-C_6)alkyl$ ,  $-C(O)NH_2$ ,  $-C(O)N((C_1-C_6)alkyl)_n$ ,  $-S(O)_n(C_1-C_6)alkyl$ ,  $-S(O)_naryl$ ,  $-S(O)_nheterocyclyl$ , and heterocyclyl, where the alkyl groups mentioned herein optionally have one or more unsaturated bonds in the alkyl portion;

n is 0, 1 or 2;

provided that

1) when Q is H; Y is O;  $R^1$  and  $R^2$  are each hydrogen, halogen, alkyl, alkoxy, alkylthio, carboxyalkyl or optionally substituted phenyl; and  $X^1$  is hydrogen or alkyl; then  $R^3$  is not alkyl, alkenyl, alkoxy, cycloalkyl or optionally substituted phenyl;

2) when Q is H; Y is O;  $R^1$  and  $R^2$  are each hydrogen, halogen, alkyl, alkoxy, alkylthio, carboxyalkyl or optionally substituted phenyl; then  $X^1$  and  $R^3$  are not taken together to form



3) when W is Cl, Br or I; Q is hydrogen; Y is O;  $X^1$  is H; then  $R^3$  is not or phenyl

5 optionally substituted by 1 to 3 substituents independently selected from the group consisting of amino, mono- or bi- $(C_1-C_6)$ alkylamino, hydroxy, chloro, fluoro, bromo, iodo,  $(C_1-C_6)$ alkyl,  $(C_1-C_6)$ alkoxy and  $-SO_2NH_2$ ;

4) when W is Cl, Br or I; Q is H;  $R^1$  is 7-Cl;  $R^2$  is H; and  $X^1$  is alkyl; then  $R^3$  is not alkyl, alkoxy or cycloalkyl;

10 5) when W is Cl, Br or I; Q is H;  $R^1$  is 7-Cl;  $R^2$  is H; and  $X^1$  is H; then  $R^3$  is not alkyl or cycloalkylamino;

6) when W is Cl, Br, I or  $NO_2$ ; Q is H; Y is O;  $X^1$  is H;  $R^1$  is OH;  $R^2$  is  $NO_2$ , amino, alkyl, alkoxy, hydroxy lower alkyl or dialkylamino; then  $R^3$  is not H or alkyl;

7) when W is Cl, Br or I; Q is H; Y is O;  $R^1$  is  $CF_3$ ,  $CH_2F$ ,  $NO_2$ , alkyl or alkoxy;  $R^2$  is H;  $X^1$  is H; 15 then  $R^3$  is not naphthyl or phenyl optionally substituted with halo,  $CF_3$ , alkyl or alkoxy;

8) when W is Cl, Br or I; Q is H;  $R^1$  is alkyl;  $R^2$  is H;  $X^1$  is H or alkyl; then  $R^3$  is not alkyl or alkoxy;

9) when W is Cl; Q is H; Y is S;  $R^1$  and  $R^2$  are each H;  $X^1$  is H; then  $R^3$  is not ethyl;

10) when W is Cl; Q is H; Y is O;  $R^1$  and  $R^2$  are each H;  $X^1$  is H; then  $R^3$  is not n-butyl; and

20 11) when W is H, then  $R^1$  and  $R^2$  are not H at the same time.

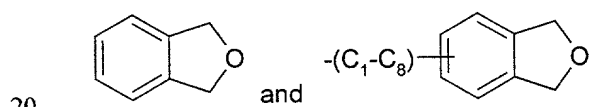
2. A compound according to claim 1, racemic-diastereomeric mixtures thereof, optical isomers thereof, prodrugs thereof, isotopes thereof or pharmaceutically-acceptable salts of said compound, isomers, prodrugs and isotopes, wherein

the alkyl, alkenyl and alkynyl moieties, and the alkyl portion of a moiety is an optionally substituted straight or branched chain having one to eight carbon atoms;

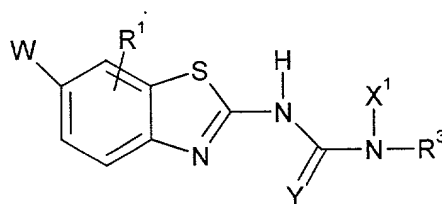
the aryl moiety and the aryl portion of a moiety is an optionally substituted phenyl, or naphthyl;

- the heterocyclcyl moiety and the heterocyclcyl portion of a moiety are selected from the group consisting of an optionally substituted piperidinyl, pyridyl, pyrazinyl, pyrimidinyl, thienyl, pyrrolidinyl, piperazinyl, thiomorpholinyl, morpholinyl, 2,3,4,5-tetrahydrofuranyl, 1,3-dioxanyl, 1,4-dioxanyl, furanyl, and 1,2,4-triazolyl, tetrazolyl, imidazolyl, pyrazolyl, thiazolyl, oxazolyl, oxadiazolyl, thiadiazolyl, benzimidazolyl, 1,3-dioxolanyl, 2-imidazoliny, imidazolidinyl, 2-pyrazolinyl, pyrazolidinyl, isothiazolyl, 1,2,3-triazolyl, 2H-pyranyl, 4H-pyranyl, 1,4-dithianyl, 1,3,5-triazinyl, 1,3,5-trithianyl, indolyl, isoindolyl, 3H-indolyl, indolinyl, purinyl, 4H-quinoliziny, cinnolinyl, phthalazinyl, quinolinyl, isoquinolinyl, quinazolinyl, quinoxalinyl, 1,8-naphthpyridinyl, pteridinyl, quinuclidinyl, carbazolyl, acridinyl, phenazinyl, phenothiazinyl, phenoxazinyl, pyrrolyl, isoxazolyl, pyridazinyl, indazolyl, benzoxazolyl, benzofuranyl, benzothiazolyl, indoliziny, imidazopyridinyl and benzothienyl.

3. A compound according to claim 2, racemic-diastereomeric mixtures thereof, optical isomers thereof, prodrugs thereof, isotopes thereof or pharmaceutically-acceptable salts of said compound, isomers, prodrugs and isotopes, wherein
- 15  $R^3$  is an optionally substituted moiety selected from the group consisting of (C<sub>1</sub>-C<sub>8</sub>)alkyl, phenyl, phenyl(C<sub>1</sub>-C<sub>8</sub>)alkyl, thienyl, thienyl(C<sub>1</sub>-C<sub>8</sub>)alkyl, piperidinyl, piperidinyl(C<sub>1</sub>-C<sub>8</sub>)alkyl, pyrrolidinyl, pyrrolidinyl(C<sub>1</sub>-C<sub>8</sub>)alkyl, morpholinyl, morpholinyl(C<sub>1</sub>-C<sub>8</sub>)alkyl, 2,3,4,5-tetrahydrofuranyl, 2,3,4,5-tetrahydrofuranyl(C<sub>1</sub>-C<sub>8</sub>)alkyl, furanyl, furanyl(C<sub>1</sub>-C<sub>8</sub>)alkyl, cycloalkyl, cycloalkyl(C<sub>1</sub>-C<sub>8</sub>)alkyl, pyridyl, pyridyl(C<sub>1</sub>-C<sub>8</sub>)alkyl, 1,2,4-triazolyl, 1,2,4-triazolyl(C<sub>1</sub>-C<sub>8</sub>)alkyl,



4. A compound of formula (IA),



(IA),

- racemic-diastereomeric mixtures thereof, optical isomers thereof, prodrugs thereof, isotopes thereof or pharmaceutically-acceptable salts of said compound, isomers, prodrugs and isotopes, wherein
- 25 W is NO<sub>2</sub> or CN;  
Y is O or S;

$R^1$  is in the 7-position and is hydrogen, methyl, ethyl, allyl, phenyl, benzyl,  $-\text{CH}_2\text{-C(O)-CH}_3$ ,  $-\text{CH}_2\text{-CO}_2\text{-t-Bu}$ ,  $-\text{CH}_2\text{-SO}_2\text{-aryl}$ ,  $-\text{alkyl-CN}$ , or  $-\text{alkyl(CN)(CH}_2\text{-aryl)}$ ;

$X^1$  is hydrogen, alkyl or hydroxyalkyl;

$R^3$  is selected from the group consisting of ethyl, n-butyl, t-butyl, n-propyl, allyl, hydroxyalkyl,

- 5 aminoalkyl,  $-\text{alkyl-NH-alkyl-OH}$ ,  $-\text{alkyl-O-alkyl-OH}$ , di-hydroxyalkyl, alkoxyalkyl, (alkylthio)hydroxyalkyl, cycloalkyl, cycloalkylalkyl, hydroxycycloalkyl, (alkylthio)(alkylester)alkyl, alkylesteralkyl, 2,4-dimethoxyphenyl, 3,5-trifluoromethylphenyl, 3-chlorophenyl, 4-chlorophenyl, 2,6-dichlorophenyl, 2-methylphenyl, 3-methylphenyl, (substituted phenyl)alkyl, phenylalkyl, heterocyclalkyl, N-alkylaminoalkyl, N,N-dialkylaminoalkyl, optionally substituted heterocycl, and optionally substituted heterocyclalkyl.

5. A compound according to claim 4, racemic-diastereomeric mixtures thereof, optical isomers thereof, prodrugs thereof, isotopes thereof or pharmaceutically-acceptable salts of said compound, isomers, prodrugs and isotopes, wherein  $R^1$  is hydrogen and  $X^1$  is hydrogen.

6. A compound according to claim 4, racemic-diastereomeric mixtures thereof, optical isomers thereof, prodrugs thereof, isotopes thereof or pharmaceutically-acceptable salts of said compound, isomers, prodrugs and isotopes, wherein

W is  $\text{NO}_2$ ;

Q is hydrogen;

$R^1$  is in the 7-position and is hydrogen, methyl, ethyl or phenyl;

- 20  $R^2$  are each hydrogen;

$X^1$  is hydrogen; and

$R^3$  is selected from the group consisting of ethyl, n-Bu, t-Bu, n-Pr, allyl, cyclopropyl, cyclobutyl, 2,4-dimethoxyphenyl, 3,5-bis-trifluoromethylphenyl, 3-chlorophenyl, 4-chlorophenyl, 2,6-dichlorophenyl, 2-methylphenyl and 3-methylphenyl.

- 25 7. A compound according to claim 3, racemic-diastereomeric mixtures thereof, optical isomers thereof, prodrugs thereof, isotopes thereof or pharmaceutically-acceptable salts of said compound, isomers, prodrugs and isotopes, wherein

Q is H;

W is  $\text{NO}_2$ ;

- 30 Y is S;

$R^1$  is in the 7-position and is hydrogen,  $-\text{CH}_2\text{-SO}_2\text{-phenyl}$ ,  $-\text{CH}_2\text{-CN}$ ,  $-\text{CH}(\text{CH}_3)(\text{CN})$ , or  $-\text{CH}(\text{CN})(\text{CH}_2\text{-phenyl})$ ;

$R^2$  is hydrogen;

$X^1$  is hydrogen, methyl or  $-(CH_2)_2-OH$ ;

$R^3$  is selected from the group consisting of ethyl, benzyl, EtOH, n-PrOH, n-BuOH, n-pentanol, n-hexanol,  $-(CH_2)_2-NH-(CH_2)_2-OH$ ,  $-(CH_2)_2-O-(CH_2)_2-OH$ ,  $-CH(CH_2CH_3)(CH_2OH)$ ,

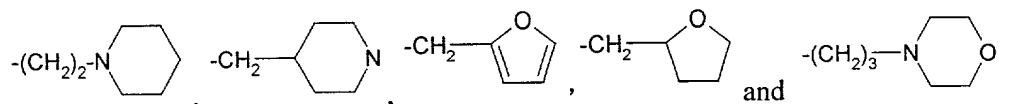
$-CH(CH_2OH)(CH_2-i-Pr)$ , 2,3-di-hydroxy-propyl, 2-hydroxypropyl,  $-CH(CH_3)(CH_2OH)$ ,

5  $-C(CH_3)_2(CH_2OH)$ ,  $-CH_2(CH_3)(CH_2OCH_3)$ , 1,3-dihydroxyisopropyl, -

$CH(CH_2OH)(CH_2CH_2SCH_3)$ , cyclopropyl, cyclopropylmethyl, 4-hydroxycyclohexyl, 3-

chlorophenyl, 4-chlorophenyl, 2-methylphenyl, 3-methylphenyl, 4-aminobenzyl, (4-

aminophenyl)ethyl,  $-(CH_2)_3-N(Et)_2$ ,  $-(CH_2)_2-N(Me)_2$ , N-piperidiny, 2,6-dimethylpiperidiny,



10 8. A compound according to claim 3, racemic-diastereomeric mixtures thereof, optical isomers thereof, prodrugs thereof, isotopes thereof or pharmaceutically-acceptable salts of said compound, isomers, prodrugs and isotopes, wherein

Y is O;

$R^1$  is in the 7-position and is hydrogen,  $-CH_2-SO_2$ -phenyl,  $-CH_2-CN$ ,  $-CH(CH_3)(CN)$ , or

15  $-CH(CN)(CH_2$ -phenyl);

$R^2$  is hydrogen;

$X^1$  is hydrogen, methyl or  $-(CH_2)_2-OH$ ;

$R^3$  is selected from the group consisting of benzyl, EtOH, n-PrOH, *t*-BuOH, n-hexanol, aminoethyl, aminopropyl,  $-(CH_2)_2-NH-(CH_2)_2-OH$ ,  $-(CH_2)_2-O-(CH_2)_2-OH$ ,  $-CH(CH_2CH_3)(CH_2OH)$ ,

20  $-CH(CH_2OH)(CH_2-i-Pr)$ , 2,3-di-hydroxy-propyl, 2-hydroxypropyl,  $-CH(CH_3)(CH_2OH)$ , 1,3-

dihydroxyisopropyl,  $-CH(CH_2OH)(CH_2CH_2SCH_3)$ , cyclobutyl, 4-hydroxycyclohexyl,

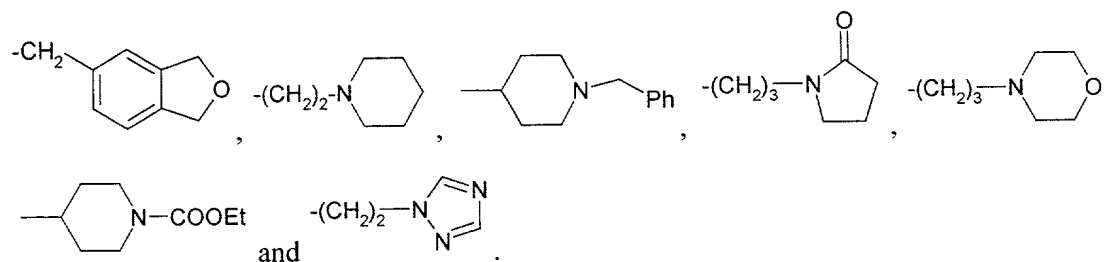
$-CH(COOEt)(CH_2)_2-SCH_3$ ,  $-(CH_2)_2-COOEt$ ,  $-(CH_2)_5-COOEt$ , (2-aminophenyl)methyl, 4-

aminobenzyl, (4-aminophenyl)ethyl,  $-C(CH_3)_2$ (phenyl),  $-CH_2$ (2,4-difluorophenyl), 2-

pyridylmethyl, 3-pyridylmethyl, 4-pyridylmethyl  $-(CH_2)_2$ -thien-2-yl,  $-CH(i-Pr)(COOEt)$ ,  $-CH(i-$

25  $Pr)(CH_2OH)$ , 3-(N-methylamino)propyl,  $-(CH_2)_3-N(Et)_2$ ,  $-(CH_2)_4-N(Et)_2$ ,  $-CH(Me)(CH_2)_4-CH_3$ ,

$-CH(Me)(CH_2)_3-N(Et)_2$ , N-piperidiny,  $-(CH_2)_2$ -(4-( $SO_2NH_2$ )phenyl), 2,6-dimethylpiperidiny,



9. A compound according to claim 3, racemic-diastereomeric mixtures thereof, optical isomers thereof, prodrugs thereof, isotopes thereof or pharmaceutically-acceptable salts of said compound, isomers, prodrugs and isotopes, wherein

W is NO<sub>2</sub>;

5 Q is hydrogen;

R<sup>1</sup> is in the 7-position and is -CH<sub>2</sub>-CO<sub>2</sub>-t-Bu, allyl or benzyl;

R<sup>2</sup> are each hydrogen;

X<sup>1</sup> is hydrogen; and

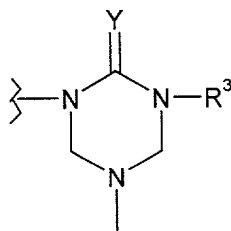
R<sup>3</sup> is ethyl.

10 10. A compound according to claim 3, racemic-diastereomeric mixtures thereof, optical isomers thereof, prodrugs thereof, isotopes thereof or pharmaceutically-acceptable salts of said compound, isomers, prodrugs and isotopes, wherein

W is NO<sub>2</sub>;

R<sup>1</sup> is in the 7-position and is hydrogen, -CH(CH<sub>3</sub>)(CN) or -CH(CN)(CH<sub>2</sub>-phenyl);

15 R<sup>2</sup> is hydrogen; and



Q is taken together with X<sup>1</sup> and to form , where Y is O and R<sup>3</sup> is ethyl.

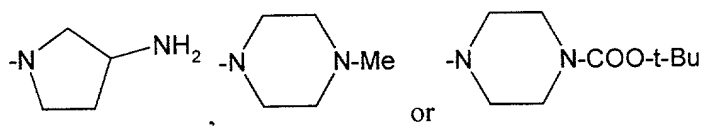
11. A compound according to claim 2, racemic-diastereomeric mixtures thereof, optical isomers thereof, prodrugs thereof, isotopes thereof or pharmaceutically-acceptable salts of said compound, isomers, prodrugs and isotopes, wherein

20 W is NO<sub>2</sub>;

Q is H;

R<sup>1</sup> and R<sup>2</sup> are each hydrogen; and

R<sup>3</sup> and X<sup>1</sup> are taken together with the nitrogen atom to which they are attached to form



25 12. A compound according to claim 3, racemic-diastereomeric mixtures thereof, optical isomers thereof, prodrugs thereof, isotopes thereof or pharmaceutically-acceptable salts of said compound, isomers, prodrugs and isotopes, wherein



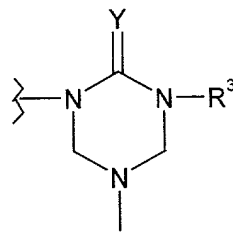
W is NO<sub>2</sub>;

R<sup>1</sup> is hydrogen or is in the 7-position and is -CH<sub>2</sub>-CN, -CH<sub>2</sub>-CONH<sub>2</sub> and -CH<sub>2</sub>-COO-t-Bu;

R<sup>2</sup> is hydrogen;

X<sup>1</sup> is hydrogen or -CH<sub>2</sub>-O-CH<sub>3</sub>;

- 5 R<sup>3</sup> is methyl, ethyl, n-BuOH, -CH<sub>2</sub>CF<sub>3</sub>, morpholino, -(CH<sub>2</sub>)<sub>7</sub>-N(Me)<sub>2</sub>, 2-phenyl-phenyl, n-BuOH, -CH<sub>2</sub>CF<sub>3</sub>, morpholino, -(CH<sub>2</sub>)<sub>4</sub>-N(Me)<sub>2</sub>, -(CH<sub>2</sub>)<sub>2</sub>-N(Me)<sub>2</sub>, -(CH<sub>2</sub>)<sub>3</sub>-NHMe, benzyl or -CH<sub>2</sub>-O-CH<sub>3</sub>;



or Q is hydrogen or is taken together with X<sup>1</sup> to form ethyl;

- 10 or R<sup>3</sup> and X<sup>1</sup> are taken together with the nitrogen atom to which they are attached to form



H or Me, where Z is methyl, 4-fluorophenyl, 2-pyridyl, 2-methoxyphenyl, -CH<sub>2</sub>-CH=CH-phenyl or 2,4-dimethoxyphenyl.

13. A compound according to claim 1, racemic-diastereomeric mixtures thereof, optical isomers thereof, prodrugs thereof, isotopes thereof or pharmaceutically-acceptable salts of said compound, isomers, prodrugs and isotopes, wherein
- 15 W is Cl or Br;

Q is H;

R<sup>3</sup> is an optionally substituted moiety selected from the group consisting of alkyl, alkenyl, phenyl, phenylalkyl, heterocyclyl, heterocyclyl-alkyl or aminoalkyl.

- 20 14. A compound according to claim 13, racemic-diastereomeric mixtures thereof, optical isomers thereof, prodrugs thereof, isotopes thereof or pharmaceutically-acceptable salts of said compound, isomers, prodrugs and isotopes, wherein
- R<sup>3</sup> is alkyl, haloalkyl, esteralkyl, N,N-dialkylaminoalkyl, alkenyl, phenyl, phenylalkyl, halophenyl, alkoxyphenyl, aryloxyphenyl, thienyl-alkyl, halopyridyl, heterocyclyl, heterocyclyl-alkyl or
- 25 aminoalkyl.

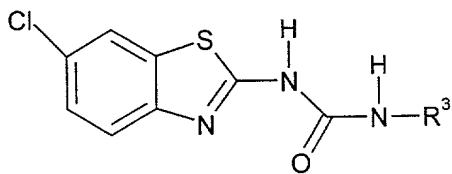
15. A compound according to claim 14, racemic-diastereomeric mixtures thereof, optical isomers thereof, prodrugs thereof, isotopes thereof or pharmaceutically-acceptable salts of said compound, isomers, prodrugs and isotopes, wherein

W is Cl;

5  $R^3$  is ethyl, propyl, butyl, t-butyl, 2,4,6-trichlorophenyl, 2,4-dimethoxyphenyl,  $-(CH_2)_2$ -2-thienyl, allyl, 2-bromoethyl, 2-phenoxyphenyl, 2,6-dichloropyrid-4-yl, benzyl,  $-(CH_2)_2$ -COOEt,  $-(CH_2)_3$ -N(Et) $_2$ ,  $-(CH_2)_4$ -N(Et) $_2$ , or  $-(CH_2)_2$ -N(Me) $_2$ .

16. A compound according to claim 15, racemic-diastereomeric mixtures thereof, optical isomers thereof, prodrugs thereof, isotopes thereof or pharmaceutically-acceptable salts of said compound, isomers, prodrugs and isotopes, wherein  $R^3$  is  $-(CH_2)_2$ -2-thienyl, allyl, 2-bromoethyl, 2-phenoxyphenyl, 2,6-dichloropyrid-4-yl, benzyl,  $-(CH_2)_2$ -COOEt,  $-(CH_2)_3$ -N(Et) $_2$ ,  $-(CH_2)_4$ -N(Et) $_2$ , or  $-(CH_2)_2$ -N(Me) $_2$ .

17. A compound of the formula



15 racemic-diastereomeric mixtures thereof, optical isomers thereof, prodrugs thereof, isotopes thereof or pharmaceutically-acceptable salts of said compound, isomers, prodrugs and isotopes, wherein  $R^3$  is ethyl, propyl, t-butyl, 2,4,6-trichlorophenyl or 2,4-dimethoxyphenyl.

18. A compound according to claim 14, racemic-diastereomeric mixtures thereof, optical isomers thereof, prodrugs thereof, isotopes thereof or pharmaceutically-acceptable salts of said compound, isomers, prodrugs and isotopes, wherein

20  $R^1$  is hydroxy, nitro, or an optionally substituted moiety selected from the group consisting of alkyl, alkoxy, arylalkyloxy and sulfonato;

$R^2$  is halo or nitro; and

$R^3$  is alkyl or phenylalkyl.

25 19. A compound according to claim 18, racemic-diastereomeric mixtures thereof, optical isomers thereof, prodrugs thereof, isotopes thereof or pharmaceutically-acceptable salts of said compound, isomers, prodrugs and isotopes, wherein

$R^1$  is hydroxy, nitro, methyl, methoxy, isopropoxy, benzyloxy, 4-fluorobenzyloxy,  $-O-C(CH_3)_2C(O)NH_2$ ,  $-O-(CH_2)_2-O-(CH_2)_2-OMe$  or  $-O-SO_2-CF_3$ ;

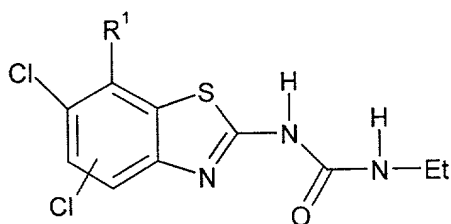
30  $R^2$  is Cl or nitro; and

R<sup>3</sup> is ethyl or benzyl.

20. A compound according to claim 19, racemic-diastereomeric mixtures thereof, optical isomers thereof, prodrugs thereof, isotopes thereof or pharmaceutically-acceptable salts of said compound, isomers, prodrugs and isotopes, wherein X<sup>1</sup> is H.

5 21. A compound according to claim 20, racemic-diastereomeric mixtures thereof, optical isomers thereof, prodrugs thereof, isotopes thereof or pharmaceutically-acceptable salts of said compound, isomers, prodrugs and isotopes, wherein W is Cl; R<sup>1</sup> is in the 7-position; and R<sup>2</sup> is in the 4- or 5-position.

22. A compound of the formula



10

racemic-diastereomeric mixtures thereof, optical isomers thereof, prodrugs thereof, isotopes thereof or pharmaceutically-acceptable salts of said compound, isomers, prodrugs and isotopes, wherein R<sup>1</sup> is methyl, methoxy or isopropoxy.

23. A method of inhibiting protein kinase activity, which comprises administering to a  
15 patient a compound of formula (IB) as defined hereinabove, racemic-diastereomeric mixtures thereof, optical isomers thereof, prodrugs thereof, isotopes thereof or pharmaceutically-acceptable salts of said compound, isomers, prodrugs and isotopes.

24. The method according to claim 23, wherein said protein kinase is a tyrosine kinase.

25. The method according to claim 24, wherein said tyrosine kinase is a receptor  
20 tyrosine kinase or a non-receptor tyrosine kinase.

26. The method according to claim 25, wherein tyrosine kinase is KDR or Lck.

27. The method according to claim 23, wherein said tyrosine kinase affects  
angiogenesis.

28. The method according to claim 27, wherein the inhibition of said tyrosine kinase  
25 results in an anti-angiogenic effect.

29. A method of treating a condition, disorder or disease, which comprises administering to a patient a compound of formula (IB) as defined hereinabove, racemic-diastereomeric mixtures thereof, optical isomers thereof, prodrugs thereof, isotopes thereof or pharmaceutically-acceptable salts of said compound, isomers, prodrugs and isotopes;

where said condition, disorder or disease is selected from the group consisting of hyperproliferative disorders, an ulcer, Lyme disease, sepsis, von Hippel Lindau disease, pemphigoid, psoriasis, psoriasis arthropathy, paraneoplastic syndrome, turbid effusions, collagenosis, Lupus erythematosus, poly-myositis, dermatomyositis, systemic scleroderma, mixed collagenosis, postinfectious arthritis, seronegative spondylarthritis, spondylitis ankylosans, vasculitis, sarcoidosis, arthrosis, pain, Paget's disease, polycystic kidney disease, fibrosis, sarcoidosis, cirrhosis, thyroiditis, hyperviscosity syndrome, Osler-Weber-Rendu disease, chronic occlusive pulmonary disease, ovarian hyperstimulation syndrome, preeclampsia, menometrorrhagia, endometriosis, chronic inflammation, systemic lupus, glomerulonephritis, synovitis, inflammatory bowel disease, Crohn's disease, glomerulonephritis, rheumatoid arthritis, juvenile arthritis, osteoarthritis, multiple sclerosis, graft rejection, sickle cell anaemia, an ocular condition, a cardiovascular condition, atherosclerosis, restenosis, ischemia/reperfusion injury, vascular occlusion, carotid obstructive disease, cancer, Crow-Fukase (POEMS) syndrome, a diabetic condition, anemia, ischemia, infarct, transplant rejection, a wound, gangrene, necrosis, asthma or edema following burns, trauma, radiation, stroke, hypoxia or ischemia, and infection by Herpes simplex, Herpes Zoster, human immunodeficiency virus, parapoxvirus, protozoa or toxoplasmosis.

30. The method according to claim 29, wherein the ocular condition is ocular or macular edema, ocular neovascular disease, scleritis, radial keratotomy, uveitis, vitritis, myopia, optic pits, chronic retinal detachment, post-laser treatment complications, conjunctivitis, Stargardt's disease, Eales disease, retinopathy or macular degeneration.

31. The method according to claim 29, wherein the cancer is a solid tumor, a sarcoma, fibrosarcoma, osteoma, melanoma, retinoblastoma, a rhabdomyosarcoma, glioblastoma, neuroblastoma, teratocarcinoma, an hematopoietic malignancy, malignant ascites, Kaposi's sarcoma, Hodgkin's disease, lymphoma, myeloma or leukemia.

32. The method according to claim 29, wherein the diabetic condition is insulin-dependent diabetes mellitus glaucoma, diabetic retinopathy or microangiopathy.

33. A method of decreasing fertility in a patient, which comprises administering to a patient an effective amount of a compound of formula (IB) as defined hereinabove, racemic-diastereomeric mixtures thereof, optical isomers thereof, prodrugs thereof, isotopes thereof or pharmaceutically-acceptable salts of said compound, isomers, prodrugs and isotopes.

34. A method of promoting angiogenesis or vasculogenesis, which comprises administering to a patient a compound of formula (IB) as defined hereinabove, racemic-

diastereomeric mixtures thereof, optical isomers thereof, prodrugs thereof, isotopes thereof or pharmaceutically-acceptable salts of said compound, isomers, prodrugs and isotopes.

35. A method according to claim 34, wherein the compound of formula (IB) is administered in combination with a pro-angiogenic growth factor.

5 36. A method of treating a patient having a condition which is mediated by protein kinase activity, said method comprising the step of administering to the patient a therapeutically effective amount of a compound of formula (IB) as defined hereinabove, racemic-diastereomeric mixtures thereof, optical isomers thereof, prodrugs thereof, isotopes thereof or pharmaceutically-acceptable salts of said compound, isomers, prodrugs and isotopes.

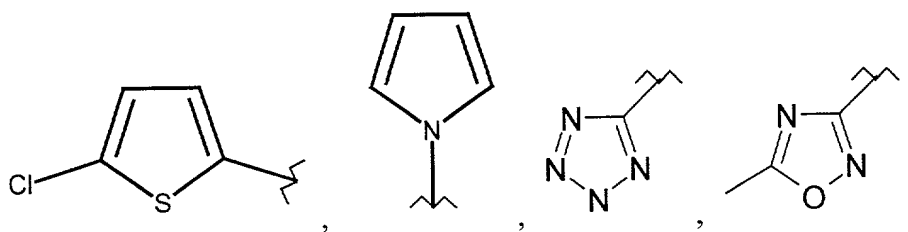
10 37. The method according to claim 36, wherein the protein kinase activity is involved in T cell activation, B cell activation, mast cell degranulation, monocyte activation, the potentiation of an inflammatory response or a combination thereof.

38. A pharmaceutical composition comprising a compound according to claim 1 and a pharmaceutically acceptable diluent or carrier.

15 39. A pharmaceutical composition for inhibiting a protein kinase, which composition comprises a pharmaceutically acceptable carrier or diluent and an effective amount of a compound of formula (IB) as defined hereinabove, racemic-diastereomeric mixtures thereof, optical isomers thereof, prodrugs thereof, isotopes thereof or pharmaceutically-acceptable salts of said compound, isomers, prodrugs and isotopes.

20 40. A compound according to claim 1, wherein W is  $-(CH_2)_2-NH-C(O)-NH-(C(R^{10})_2)_a-Z^1_q$  or an optionally substituted heterocyclyl;  $R_1$  and  $R_2$  are each H; Q is H; Y is O;  $X^1$  is H; and  $R_3$  is an optionally substituted alkyl.

41. A compound according to claim 40 wherein W is:



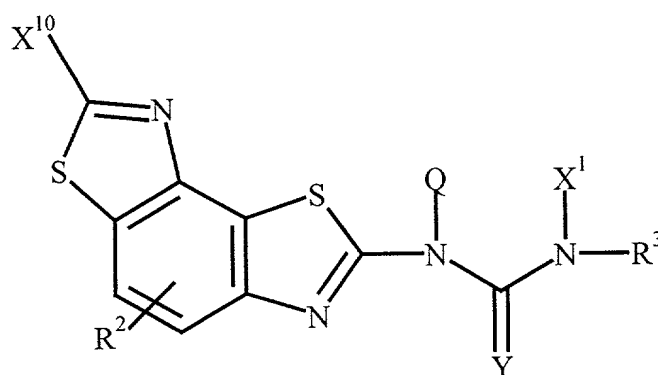
25  $-(CH_2)_2-NH-C(O)-NH-Et$ ,  $-CH_2-NH-C(O)-NH-ethyl$ ,  $-CH_2-NH_2$ ,  $-NH-phenyl$ ,  $-C(O)-NH_2$ ,  $-CH_2-NH-S(O)_2-Ph$ ,  $-C(O)-NH-phenyl$ ,  $-CH_2-NH-S(O)_2-CF_3$ ,  $-CH_2-CN$ ,  $-CH_2-NH-CH_2-5-methyl-furan-2-yl$ ,  $-C(O)-NH-(CH_2)_3-(4-methylpiperazin-1-yl)$ ,  $-(CH_2)_2-NH-C(O)-NH-(phenyl)$ , or  $-(CH_2)_2-NH-C(O)-NH-(p-toluy)$ .

42. A compound according to claim 41, wherein  $R^3$  is ethyl.

43. A compound according to claim 1, wherein W is CN;  $R^1$  and  $R^2$  are each H; Q is H; Y is O;  $X^1$  is H; and  $R^3$  is an optionally substituted heterocyclyl-heterocyclyl, or heterocyclyl-cycloalkyl.

44. A compound according to claim 1, wherein  $R^3$  is 3-(4-methylpiperazino)propyl, 2-morpholinoethyl, 3-(9-benzyl-9-azabicyclo[3.3.1]nonyl, 6-(4-methylpiperazino)-3-pyridyl, 3-(8-benzyl-8-azabicyclo[3.2.1]octyl, methyl-3-(8-benzyl-8-azabicyclo[3.2.1]octyl, *tert*-butylcarboxylate-1-piperidinylmethyl, 4-piperidinylmethyl, *tert*-butylcarboxylate-1-piperazinyl-ethyl, 2-piperazinoethyl, 4-(4-methylpiperazino)cyclohexyl, 3-piperidinopropyl, 6-(4-methylpiperazino)-3-pyridyl.

45. A compound according to claim 1, wherein  $R^1$  and W are taken together to form

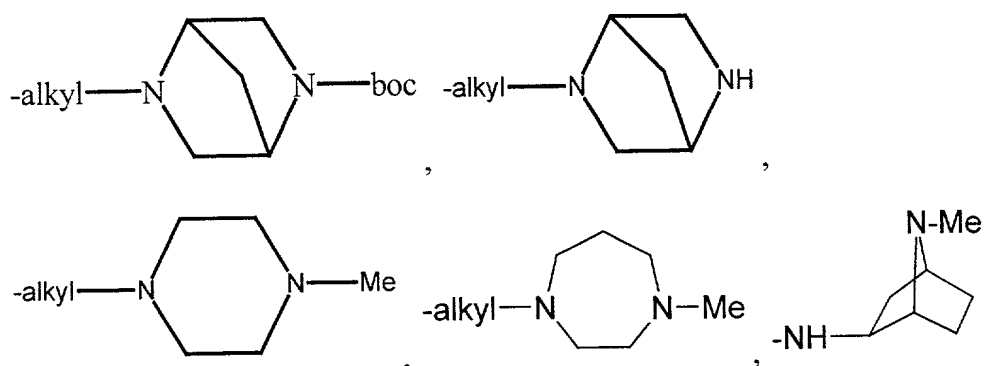


where  $X^{10}$  is independently selected from the same group of substituents as  $X^3$ .

46. A compound according to claim 45, wherein  $R^2$  is H; Q is H; Y is O;  $X^1$  is H;  $R^3$  is alkyl; and  $X^{10}$  is ethyl, 3-pyridyl, N-(p-Br-phenyl)-NH-, 1-piperidyl or  $CH_3$ -NH-.

47. A compound according to claim 1, wherein W is H; and  $R^1$  is  $-S-X^3$ ,  $-S(O)X^3$  or  $-S(O)_2X^3$ .

48. A compound according to claim 1, wherein W is Br, Cl or p-fluorophenoxy,  $R^1$  and  $R^2$  are each H; Q is H; Y is O;  $X^1$  is H; and  $R^3$  is alkyl-chloro,



- 5 -alkyl-piperazin-1-yl, -alkyl-(2,5-dimethylpiperazin-1-yl), -alkyl-(3,5-dimethylpiperazin-1-yl), -alkyl-(3-aminocarbonylpiperidin-1-yl), -alkyl-(4-hydroxypiperidin-1-yl), -alkyl-(3-hydroxypiperidin-1-yl), -alkyl-COOEt, -alkyl-COOH, -alkyl-(4-methylpiperazin-1-yl), -alkyl-(N-morpholinoethylamino), -alkyl-(N-piperidinyethylamino), -alkyl-(N-(N,N-diethylaminoethyl)-N-(methyl)amino), -alkyl-((1-ethylpyrrolidin-2-yl)-methylamino), -alkyl-(N-(1-methylpiperidin-4-yl)-N-(methyl)amino), -alkylamino, -alkyl-piperidin-1-yl or -alkyl-(N,N-diethylaminoethylamino).

10 49. A compound according to claim 48, wherein the alkyl group is methylene, ethylene or propylene.

50. A compound according to claim 1, wherein  $R^2$  is H; Q is H; Y is O;  $X^1$  is H and  $R^3$  is ethyl.

51. A compound according to claim 50, wherein W is H or Br; and  $R^1$  is in the 7-position of the benzothiazolyl ring and is  $-C\equiv CH$ ,  $-C\equiv C-(2\text{-pyridinyl})$ ,  $-C\equiv C-CH_2-N(CH_3)_2$ ,  $-O-CH(CH_3)_2$ , phenyl or  $-CH=CH_2$ .

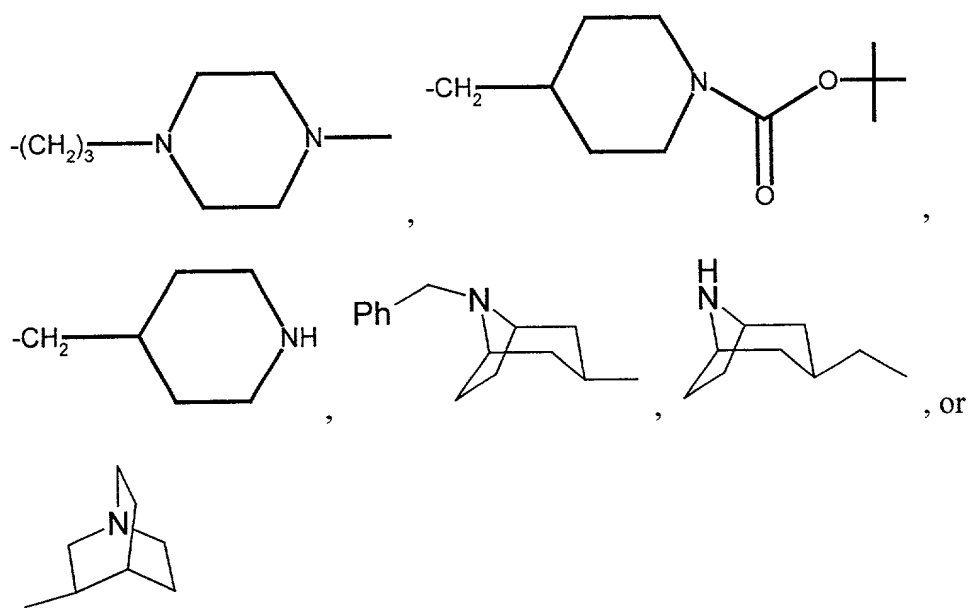
52. A compound according to claim 50, wherein  $R^1$  is  $-CH=CH_2$  and W is  $-CH=CH_2$ .

53. A compound according to claim 50, wherein  $R^1$  is H and W is benzyl, p-fluorophenoxy or pyridin-4-ylmethyl.

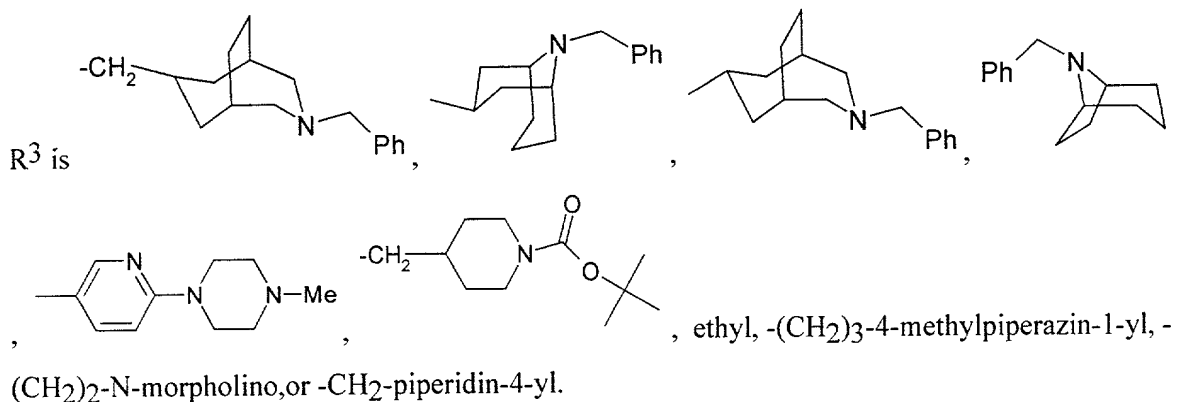
54. A compound according to claim 50, wherein W is F;  $R^1$  is in the 7-position of the benzothiazolyl ring and is H or Cl; and  $R^2$  is in the 5-position of the benzothiazolyl ring and is H or Cl.

55. A compound according to claim 50, wherein  $R^1$  is H and W is  $-CH\equiv CH$ ,  $-C\equiv C-Ph$ ,  $-C\equiv C-CH_2-N(CH_3)_2$ ,  $-C\equiv C-(4\text{-fluorophenyl})$ ,  $-C\equiv C-(p\text{-toluyl})$ ,  $-(CH_2)_2-Ph$ ,  $-(CH_2)_2-(4\text{-fluorophenyl})$ ,  $-CH=CH\text{-phenyl}$ ,  $-CH=CH-CH_2-N(CH_3)_2$ ,  $-CH=CH-(4\text{-fluorophenyl})$ ,  $-CH=CH-(p\text{-toluyl})$ , or  $-CH=CH-(1\text{-imidazolyl})$ .

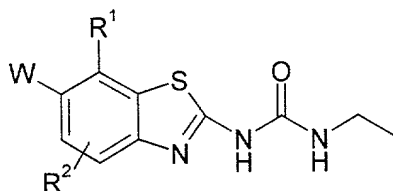
56. A compound according to claim 1, wherein W is p-fluorophenoxy,  $-(CH_2)_3-NHMe$  or  $-(CH_2)_2-1\text{-piperazinyl}$ ; and  $R^3$  is  $-CH_2-C(Me)_2-CH_2-N(CH_3)_2$ ,  $-(CH_2)_2-(5\text{-imidazolyl})$ ,



57. A compound according to claim 1, wherein  $R^1$  is in the 7-position of the benzothiazolyl ring and is H or CN;  $R^2$  is H; Y is O; Q and  $X^1$  are each H; W is Cl,  $NO_2$ ,  $-CH_2-OH$ ,  $-CH_2-O-C(O)-NH-Et$ , -S-phenyl, -O-phenyl, -S- $CH_3$ , -C(O)-phenyl, -S(O)-phenyl, -S-*p*-nitrophenyl, -S-*p*-methylphenyl, -S-*p*-chlorophenyl, -S-*p*-methoxyphenyl, -S-*m*- $CF_3$ -phenyl, -S-*o*-chlorophenyl, -C(O)- $CH_3$ , -NH-C(O)-NH- $(-CH_2)_2$ -2-thienyl, -NH-C(O)-NH-3-pyridyl, -S(O) $_2$ -*p*-(carboxymethylamino)-phenyl, -N-morpholino, -NH-C(O)-NH-Et, -NH-C(O)-NH- $CH_2$ -phenyl, -S-*p*-chlorophenyl, -S-*p*-bromophenyl, -S-*m*- $CF_3$ -phenyl, or -S-*p*-fluorophenyl;



58. A compound of the formula





wherein W is H, -OCF<sub>3</sub>, -O-Et, F, CH<sub>3</sub>, -OCH<sub>3</sub>, -SO<sub>2</sub>-Me, NH<sub>2</sub>, -NH-C(O)-Me, -NH-CH<sub>2</sub>-phenyl, -NH-S(O)<sub>2</sub>-2-thienyl, -NH-S(O)<sub>2</sub>-(3,5-dimethylisoxazol-4-yl), -NH-S(O)<sub>2</sub>-Me, -NH-S(O)<sub>2</sub>-CH<sub>2</sub>-phenyl, -NH-C(O)-O-CH<sub>2</sub>-CCl<sub>3</sub>, -NH-C(O)-O-CH<sub>2</sub>-Ph, -NH-C(O)-O-Me or NO<sub>2</sub>;

R<sup>1</sup> is H, F or -CH<sub>2</sub>-S(O)<sub>2</sub>-phenyl; and

5 R<sup>2</sup> is H, 4-Cl, 4-methyl, 5-methyl, 5-Cl, 5-F or 5-OCH<sub>3</sub>.

59. A method of using a compound of formula (IB) or a pharmaceutically acceptable salt thereof as a replacement therapy for anti-inflammatory glucocorticosteroid therapy in a patient undergoing anti-inflammatory glucocorticosteroid therapy comprising the step of replacing a glucocorticosteroid with a compound of formula (IB) or a pharmaceutically acceptable salt thereof.

10 60. A method of using a compound of formula (IB) or a pharmaceutically acceptable salt thereof in conjunction with glucocorticosteroid therapy in a patient undergoing glucocorticosteroid therapy comprising the step of replacing a portion of the amount of glucocorticosteroid administered to said patient.